

APPARATUS AND METHODS FOR MONITORING AND CONTROLLING  
POWER AMPLIFIER LINEARITY USING DETECTED FUNDAMENTAL AND  
HARMONIC COMPONENTS

ABSTRACT OF THE DISCLOSURE

An apparatus for monitoring a power amplifier coupled to a transmission medium includes a detector circuit, coupled to the transmission medium, that generates first and second detector signals corresponding to respective fundamental and harmonic components of a power amplifier output signal produced by the power amplifier. A comparing circuit is coupled to the detector circuit and compares the first and second detector signals. The comparing circuit, responsive to a comparison of the first and second detector signals, may generate a signal that indicates linearity of the power amplifier. In some embodiments, the detector circuit may generate the second detector signal without requiring phase information for the harmonic component. In other embodiments, a control circuit controls linearity of the power amplifier responsive to comparison of the first and second detector signals, for example, by controlling power amplifier bias and/or input signal level based on the comparison. Related methods are also discussed.